Space Weather Forecast

Issued on Saturday, 26 November 2022 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm (G1) intervals through the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours, with one solitary Common-class flare at 25/0722 UTC, emanating from a sunspot region in the northwest. This was one of five sunspot regions (four numbered) on the disc, all small, simple and stable at present.

No new Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind showed a transition from a slow regime into a coronal hole high speed stream early in the UTC day. Speeds increased from around 400km/s, quickly up to 475km/s around 25/0200 UTC, then a further but erratic increase, mainly between 500-550km/s later in the day, with a peak speed of 567km/s at 25/1712 UTC. The corresponding magnetic field associated with the solar wind was Moderate to Strong initially, but reduced during the day to become Moderate to Weak by the end of the UTC day. The important north-south component was more erratic, with regular deviations from positive to negative from 25/0200 UTC onwards. Resultant Geomagnetic activity was Quiet to Unsettled, but with a peak of an Active (Kp4) interval 25/2100-2400 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low or Very Low, with a chance of isolated Common-class flares and a very slight chance of isolated Moderate-class X-ray flares.

Solar Wind / Geomagnetic Activity: Several recent CMEs have occurred on, or close to the Earth-Sun line. There is greater than average uncertainty regarding the timings and impacts of these features however, given intermittent solar imagery and feint coronagraph signatures to fit analysis.

The ongoing high-speed stream from a coronal hole, coupled with further high-speed streams expected in the coming days means that Elevated solar winds are expected to continue through 26-28 Nov (Day 1-3), perhaps slowing to Slightly Elevated levels by Day 4 (29 Nov), though with low confidence.

Geomagnetic activity is expected to be mainly Unsettled to Active on Day 1, but with a chance of G1/Minor Storm intervals. From Day 2 onwards mainly Unsettled activity is expected, but with low confidence given the presence of a number of high-speed streams and uncertain CME timings and impacts. As such, there will be an ongoing slight chance of G1/Minor Storm intervals throughout the period.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected during the forecast period.

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Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	30	20	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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